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## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

REC'D 20 OCT 2000

WIPO

PCT

(PCT Article 36 and Rule 70)

|   |   |  |
|---|---|--|
| Applicant's or agent's file reference<br>6781/32  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |  |
| International application No.<br>PCT/US99/18055   | International filing date (day/month/year)<br>09 AUGUST 1999  | Priority date (day/month/year)<br>11 AUGUST 1998 |
| International Patent Classification (IPC) or national classification and IPC<br>IPC(7): B03D 1/02, 1/006, 1/008, 1/01, 1/012, 1/014 and US Cl.: 209/ 166, 167; 252/61 |   |  |
| Applicant<br>VERSITECH INC.   |   |  |

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

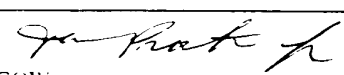
2. This REPORT consists of a total of 4 sheets.

☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

|  |  |
|--|--|
| Date of submission of the demand<br><br>08 MARCH 2000  | Date of completion of this report<br><br>01 OCTOBER 2000   |
| Name and mailing address of the IPEA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, DC 20231 | Authorized officer<br><br>THOMAS M. LITHGOW |
| Facsimile No. (703) 305-3230   | Telephone No. 703-308-0651   |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18055

**I. Basis of the report**1. With regard to the **elements** of the international application:\*

- ☒ the international application as originally filed
- ☒ the description  
pages 1-27 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages 28-32 , as originally filed  
pages NONE , as amended (together with any statement) under Article 19  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the drawings:  
pages none , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_
- ☒ the sequence listing part of the description:  
pages NONE , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of \_\_\_\_\_

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3)

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form
- ☐ furnished subsequently to this Authority in computer readable form
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4 ☒ The amendments have resulted in the cancellation of

- ☒ the description, pages none
- ☒ the claims, Nos none
- ☒ the drawings, sheets/fig none

5 ☒ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c))\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\*Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18055

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. statement

|                               |        |                          |     |
|-------------------------------|--------|--------------------------|-----|
| Novelty (N)                   | Claims | <u>8-11, 22, 25-31</u>   | YES |
|                               | Claims | <u>1-7, 12-21, 23-24</u> | NO  |
| Inventive Step (IS)           | Claims | <u>22</u>                | YES |
|                               | Claims | <u>1-21 and 23-31</u>    | NO  |
| Industrial Applicability (IA) | Claims | <u>1-31</u>              | YES |
|                               | Claims | <u>none</u>              | NO  |

## 2. citations and explanations (Rule 70.7)

Claims 1-3, 6-7 and 12 lack novelty under PCT Article 33(2) as being anticipated by US 5544760 (Benn et al). US('760) discloses the use of rapeseed oil in the flotation of galena.

Claims 1-5,7,12, 14-15, 19-20 and 23-24 lack novelty under PCT Article 33(2) as being anticipated by US 1064723 (Greenway et al). US('723) discloses the use of a number of oils in the flotation of metal sulfides. The oils include among others, eucalyptus oil, thyme, cinnamon, sassafras, peppermint (see column 1, lines 30+).

Claims 1-3,6-7, 12-18, 21 and 23 lack novelty under PCT Article 33(2) as being anticipated by US 2120217 (Harris). US('2217) discloses the flotation of a complex lead-zinc-iron sulfide ore with the use of cornoil and an emulsion of an ester of lauric acid and diethylene glycol. The cornoil may be replaced by any number of oils such as cottonseed oil, olive oil, lard oil etc. (pg.5, lines 45+).

Claims 1-5,7,12-15, 19-20, and 23-24 novelty under PCT Article 33(2) as being anticipated by US 1208171 (Lavers). US('171) discloses the flotation of lead-zinc sulfides with the use of eucalyptus oil and mineral oil.

Claims 1-5,7, 12-15,19-20 and 23 lack novelty under PCT Article 33(2) as being anticipated by US 1102873 (Chapman et al). US('873) discloses the flotation of metal sulfide ores (ie chalcopyrite) with the use of fuel oil and kerosene oil and wood tar oil or essential oils (pg. 2, col. 2, lines 112+).

(Continued on Supplemental Sheet.)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US99/18055

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**I. BASIS OF REPORT:**

5. (Some) amendments are considered to go beyond the disclosure as filed:

NONE

**V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):**

Claims 8-11 and 25-31 lack an inventive step under PCT Article 33(3) as being obvious over US 1064723 in view of US 4507198. US('723) discloses the early work in flotation which typically employed oils or oily type collectors in sulfide ore flotation. Eventually sulphydryl type collectors were developed for sulfide ore flotation. These sulphydryl type collectors were more selective resulting in higher grades and recovery however the cost of the sulphydryl type collectors is higher than the corresponding oil type collectors. US 4507198 seeks to mitigate the cost of a "sulfur containing sulfide mineral flotation promoter" (ie sulphydryl type collector) by using a portion of an oil type collector in combination with the sulphydryl type collector. Such a combined collector is noted to achieve the desired grade and recovery while reducing the ongoing cost of the purchase of the collector reagent.

Claim 22 meets the criteria set out in PCT Article 33(2)-(4), because the prior art does not teach or fairly suggest the use of 2-butyloctyl oleic acid ester as a collector in the flotation process as set forth in the claim.

----- NEW CITATIONS -----

NONE

# PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY **BRINKS HOFER GILSON & LIONE**

To: MARC V. RICHARDS  
BRINKS HOFER GILSON & LIONE  
POST OFFICE BOX 10087  
CHICAGO IL 60610

**RECEIVED PCT**  
**RECEIVED**  
NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL SEARCH REPORT  
OR THE DECLARATION  
**U. S. DOCKET**

(PCT Rule 44.1)

Date of Mailing  
(day/month/year) **18 NOV 1999**

Applicant's or agent's file reference  
6781/32

**FOR FURTHER ACTION** See paragraphs 1 and 4 below

International application No.  
PCT/US99/18055

International filing date  
(day/month/year)  
09 AUGUST 1999

Applicant  
VERSITECH INC.

1. ☒ The applicant is hereby notified that the international search report has been established and is transmitted herewith.  
**Filing of amendments and statement under Article 19:**  
The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46).  
**When?** The time limit for filing such amendments is normally 2 months from the date of transmittal of the international search report; however, for more details, see the notes on the accompanying sheet.  
**Where?** Directly to the International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland  
Facsimile No.: (41-22) 740.14.35  
**For more detailed instructions, see the notes on the accompanying sheet.**
2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.
3. ☐ **With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:**  
☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.  
☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.
4. **Further action(s):** The applicant is reminded of the following:  
Shortly after 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in rules 90 bis 1 and 90 bis 3, respectively, before the completion of the technical preparations for international publication.  
Within 19 months from the priority date, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).  
Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 19 months from the priority date or could not be elected because they are not bound by Chapter II

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer

THOMAS M. LITHGOW *Thomas M. Lithgow*

Telephone No. 703-308-0651

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

|  |  |
|--|--|
| Applicant's or agent's file reference<br>6781/32 | <div style="display: flex; justify-content: space-between;"> <div> <b>FOR FURTHER ACTION</b> </div> <div> <small>see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.</small> </div> </div> |
| International application No.<br>PCT/US99/18055  | <div style="display: flex; justify-content: space-between;"> <div> International filing date (<i>day/month/year</i>)<br/>09 AUGUST 1999 </div> <div> (Earliest) Priority Date (<i>day/month/year</i>)<br/>11 AUGUST 1998 </div> </div>                               |
| Applicant<br>VERSITECH INC.                      |  |

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report

1. ☐ Certain claims were found unsearchable (See Box I).
  
2. ☐ Unity of invention is lacking (See Box II).
  
3. ☐ The international application contains disclosure of a nucleotide and/or amino acid sequence listing and the international search was carried out on the basis of the sequence listing
 

☐ filed with the international application.  
☐ furnished by the applicant separately from the international application.  

☐ but not accompanied by a statement to the effect that it did not include matter going beyond the disclosure in the international application as filed.

☐ transcribed by this Authority.
  
4. With regard to the title,
 

☒ the text is approved as submitted by the applicant.  
☐ the text has been established by this Authority to read as follows:
  
  
5. With regard to the abstract,
 

☒ the text is approved as submitted by the applicant.  
☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.
  
6. The figure of the drawings to be published with the abstract is:
 

Figure No. \_\_\_\_\_
 

☐ as suggested by the applicant  
☐ because the applicant failed to suggest a figure  
☐ because this figure better characterizes the invention

☐ None of the figures

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/18055

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) : B03D 1/02, 1/006, 1/008, 1/01, 1/012, 1/014

US CL : 209/ 166, 167; 252/61

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 209/ 166, 167; 252/61

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

NONE

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages            | Relevant to claim No.         |
|-----------|---|-------------------------------|
| X         | US 5,544,760 A (BENN et al) 13 August 1996, entire document.                                  | 1-3,6-7, 12                   |
| X         | US 1,064,723 A (GREENWAY et al) 17 June 1913, see col. 1, lines 16-38.                        | 1-5,7,12, 14-15, 19-20, 23-24 |
| ---       |   | -----                         |
| Y         |   | 8-11 and 25-31                |
| X         | US 2,120,217 A (HARRIS) 07 June 1938, see pg. 4, col. 2, lines 62+ to pg. 5, col. 1, line 55. | 1-3,6-7,12-18,21 and 23       |
| X         | US 1,208,171 A (LAVERS et al) 12 December 1916, see entire document.                          | 1-5,7,12-15 ,19-20, and 23-24 |

☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

|   |  |
|---|--|
| * Special categories of cited documents:  | *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention  |
| *A* document defining the general state of the art which is not considered to be of particular relevance  | *X* document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone   |
| *E* earlier document published on or after the international filing date  | *Y* document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | *Z* document member of the same patent family  |
| *O* document referring to an oral disclosure, use, exhibition or other means  |  |
| *P* document published prior to the international filing date but later than the priority date claimed  |  |

|  |  |
|--|--|
| Date of the actual completion of the international search<br>01 NOVEMBER 1999  | Date of mailing of the international search report<br><b>18 NOV 1999</b>                     |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No (703) 305-3230 | Authorized officer<br>THOMAS M LITHGOW <i>Thomas M. Lithgow</i><br>Telephone No 703-308-0651 |

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US99/18055

## C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

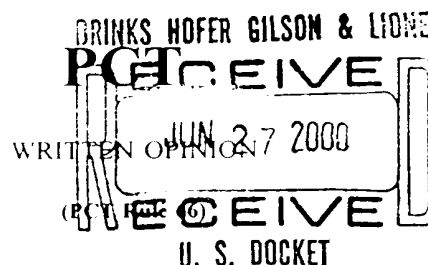
| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No.       |
|-----------|--|-----------------------------|
| X         | US 1,102,873 A (CHAPMAN et al) 07 July 1914, see entire document.                  | 1-5,7, 12-15, 19-20, and 23 |
| Y         | US 4,507,198 A (UNGER et al) 26 March 1985, see the abstract.                      | 8-11 and 25-31              |
| Y         | WO 97/25149 (ALLIED COLLOIDS LIMITED) 17 July 1997, see the abstract.              | 9                           |



# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: MARC V. RICHARDS  
BRINKS HOFER GILSON & LIONE  
POST OFFICE BOX 10087  
CHICAGO IL 60610



|  |   |
|--|---|
| Date of Mailing<br>(day/month/year) <b>22 JUN 2000</b>   |   |
| Applicant's or agent's file reference<br><b>6781/32</b>  | <b>REPLY DUE</b> within <b>TWO</b> months <i>invz</i><br>from the above date of mailing |
| International application No.<br><b>PCT/US99/18055</b>   | International filing date (day/month/year)<br><b>09 AUGUST 1999</b>                     |
| Priority date (day/month/year)<br><b>11 AUGUST 1998</b>  |   |
| International Patent Classification (IPC) or both national classification and IPC<br>IPC(7): B03D 1/02, 1/006, 1/008, 1/01, 1/012, 1/014 and US Cl.: 209/ 166, 167; 252/61 |   |
| Applicant<br><b>VERSITECH INC.</b>   |   |

1. This written opinion is the first (first, etc.) drawn by this International Preliminary Examining Authority.

2. This opinion contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

3. The applicant is hereby invited to reply to this opinion.

**When?** See the time limit indicated above. ~~The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).~~

**How?** By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

**Also** For an additional opportunity to submit amendments, see Rule 66.4. For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis. For an informal communication with the examiner, see Rule 66.6.

**If no reply is filed**, the international preliminary examination report will be established on the basis of this opinion.

4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 11 DECEMBER 2000

|  |   |
|--|---|
| Name and mailing address of the IPEA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231 | Authorized officer<br><i>Thomas M. Hingow</i><br>THOMAS M. HINGOW |
| Facsimile No. (703) 305-3230   | Telephone No. 703-308-0651  |

WRITTEN OPINION

International application No.

PCT/US99/18055

**I. Basis of the opinion**

1. With regard to the elements of the international application \*

☒ the international application as originally filed

☒ the description:

pages 1-27 , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of

☒ the claims:

pages 28-31 , as originally filed  
pages NONE , as amended (together with any statement) under Article 19  
pages NONE , filed with the demand  
pages NONE , filed with the letter of

☒ the drawings:

pages none , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of

☒ the sequence listing part of the description:

pages NONE , as originally filed  
pages NONE , filed with the demand  
pages NONE , filed with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).

☐ the language of publication of the international application (under Rule 48.3(b)).

☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the written opinion was drawn on the basis of the sequence listing:

☐ contained in the international application in printed form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

☒ the description, pages none

☒ the claims, Nos. none

☒ the drawings, sheets/fig none

5. ☐ This opinion has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed."

WRITTEN OPINION

International application No.  
PCT/US99/18055

**V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. statement

|                               |        |                          |     |
|-------------------------------|--------|--------------------------|-----|
| Novelty (N)                   | Claims | <u>8-11, 22, 25-31</u>   | YES |
|                               | Claims | <u>1-7, 12-21, 23-24</u> | NO  |
| Inventive Step (IS)           | Claims | <u>22</u>                | YES |
|                               | Claims | <u>1-21 and 23-31</u>    | NO  |
| Industrial Applicability (IA) | Claims | <u>1-31</u>              | YES |
|                               | Claims | <u>none</u>              | NO  |

2. citations and explanations

Claims 1-3, 6-7 and 12 lack novelty under PCT Article 33(2) as being anticipated by US 5544760 (Benn et al). US('760) discloses the use of rapeseed oil in the flotation of galena.

Claims 1-5,7,12, 14-15, 19-20 and 23-24 lack novelty under PCT Article 33(2) as being anticipated by US 1064723 (Greenway et al). US('723) discloses the use of a number of oils in the flotation of metal sulfides. The oils include among others, eucalyptus oil, thyme, cinnamon, sassafras, peppermint (see column 1, lines 30+).

Claims 1-3,6-7, 12-18, 21 and 23 lack novelty under PCT Article 33(2) as being anticipated by US 2120217 (Harris). US('2217) discloses the flotation of a complex lead-zinc-iron sulfide ore with the use of cornoil and an emulsion of an ester of lauric acid and diethylene glycol. The cornoil may be replaced by any number of oils such as cottonseed oil, olive oil, lard oil etc. (pg.5, lines 45+).

Claims 1-5,7,12-15, 19-20, and 23-24 novelty under PCT Article 33(2) as being anticipated by US 1208171 (Lavers). US('171) discloses the flotation of lead-zinc sulfides with the use of eucalyptus oil and mineral oil.

Claims 1-5,7, 12-15,19-20 and 23 lack novelty under PCT Article 33(2) as being anticipated by US 1102873 (Chapman et al). US('873) discloses the flotation of metal sulfide ores (ie chalcopyrite) with the use of fuel oil and kerosene oil and wood tar oil or essential oils (pg. 2, col. 2, lines 112+).

(Continued on Supplemental Sheet.)

WRITTEN OPINION

International application No.  
PCT/US99 18055

**Supplemental Box**

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

**TIME LIMIT:**

The time limit set for response to a Written Opinion may not be extended. 37 CFR 1.484(d). Any response received after the expiration of the time limit set in the Written Opinion will not be considered in preparing the International Preliminary Examination Report.

**V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):**

Claims 8-11 and 25-31 lack an inventive step under PCT Article 33(3) as being obvious over US 1064723 in view of US 4507198. US('723) discloses the early work in flotation which typically employed oils or oily type collectors in sulfide ore flotation. Eventually sulphydryl type collectors were developed for sulfide ore flotation. These sulphydryl type collectors were more selective resulting in higher grades and recovery however the cost of the sulphydryl type collectors is higher than the corresponding oil type collectors. US 4507198 seeks to mitigate the cost of a "sulfur containing sulfide mineral flotation promoter" (ie sulphydryl type collector) by using a portion of an oil type collector in combination with the sulphydryl type collector. Such a combined collector is noted to achieve the desired grade and recovery while reducing the ongoing cost of the purchase of the collector reagent.

Claim 22 meets the criteria set out in PCT Article 33(2) (4), because the prior art does not teach or fairly suggest the use of 2-butyloctyl alcohol and ester as a collector in the flotation process as set forth in the claim.

----- NEW CITATIONS -----

NONE